

FIG. 1A

gggcaggaagacggcgctgcccgaggagc																				-153
ggggcgggcgggcgcgggggagcgggcggcgggcgggagccaggcccgggcggggcggggcgggcgggccag																				-77
aagaggcgggcgggcgcgctccggccggtctgcggcggttgcccttggtttggtttggttcggcgcggtggagaag																				-1
ATG	CTG	CAG	TCC	CTG	GCC	GGC	AGC	TCG	TGC	GTG	CGC	CTG	GTG	GAG	CGG	CAC	CGC	TCG		57
M	L	Q	S	L	A	G	S	S	C	V	R	L	V	E	R	H	R	S		19
GCC	TGG	TGC	TTC	GGC	TTC	CTG	GTG	CTG	GGC	TAC	TTG	CTC	TAC	CTG	GTC	TTC	GGC	GCA		114
A	W	C	F	G	F	L	V	L	G	Y	L	L	Y	L	V	F	G	A		38
GTG	GTC	TTC	TCC	TCG	GTG	GAG	CTG	CCC	TAT	GAG	GAC	CTG	CTG	CGC	CAG	GAG	CTG	CGC		171
V	V	F	S	S	V	E	L	P	Y	E	D	L	L	R	Q	E	L	R		57
AAG	CTG	AAG	CGA	CGC	TTC	TTG	GAG	GAG	CAC	GAG	TGC	CTG	TCT	GAG	CAG	CAG	CTG	GAG		228
K	L	K	R	R	F	L	E	E	H	E	C	L	S	E	Q	Q	L	E		76
CAG	TTC	CTG	GGC	CGG	GTG	CTG	GAG	GCC	AGC	AAC	TAC	GGC	GTG	TCG	GTG	CTC	AGC	AAC		285
Q	F	L	G	R	V	L	E	A	S	N	Y	G	V	S	V	L	S	N		95
GCC	TCG	GGC	AAC	TGG	AAC	TGG	GAC	TTC	ACC	TCC	GCG	CTC	TTC	TTC	GCC	AGC	ACC	GTG		342
A	S	G	N	W	N	W	D	F	T	S	A	L	F	F	A	S	T	V		114
CTC	TCC	ACC	ACA	GGT	TAT	GGC	CAC	ACC	GTG	CCC	TTG	TCA	GAT	GGA	GGT	AAG	GCC	TTC		399
L	S	T	T	G	Y	G	H	T	V	P	L	S	D	G	G	K	A	F		133
TGC	ATC	ATC	TAC	TCC	GTC	ATT	GGC	ATT	CCC	TTC	ACC	CTC	CTG	TTC	CTG	ACG	GCT	GTG		456
C	I	I	Y	S	V	I	G	I	P	F	T	L	L	F	L	T	A	V		152
GTC	CAG	CGC	ATC	ACC	GTG	CAC	GTC	ACC	CGC	AGG	CCG	GTC	CTC	TAC	TTC	CAC	ATC	CGC		513
V	Q	R	I	T	V	H	V	T	R	R	P	V	L	Y	F	H	I	R		171
TGG	GGC	TTC	TCC	AAG	CAG	GTG	GTG	GCC	ATC	GTC	CAT	GCC	GTG	CTC	CTT	GGG	TTT	GTG		570
W	G	F	S	K	Q	V	V	A	I	V	H	A	V	L	L	G	F	V		190
ACT	GTG	TCC	TGC	TTC	TTC	TTC	ATC	CCG	GCC	GCT	GTC	TTC	TCA	GTC	CTG	GAG	GAT	GAC		627
T	V	S	C	F	F	F	I	P	A	A	V	F	S	V	L	E	D	D		209

FIG. 1B-1

TGG AAC TTC CTG GAA TCC TTT TAT TTT TGT TTT ATT TCC CTG AGC ACC ATT GGC CTG	684
W N F L E S F Y F C F I S L S T I G L	228
GGG GAT TAT GTG CCT GGG GAA GGC TAC AAT CAA AAA TTC AGA GAG CTC TAT AAG ATT	741
G D Y V P G E G Y N Q K F R E L Y K I	247
GGG ATC ACG TGT TAC CTG CTA CTT GGC CTT ATT GCC ATG TTG GTA GTT CTG GAA ACC	798
G I T C Y L L L G L I A M L V V L E T	266
TTC TGT GAA CTC CAT GAG CTG AAA AAA TTC AGA AAA ATG TTC TAT GTG AAG AAG GAC	855
F C E L H E L K K F R K M F Y V K K D	285
AAG GAC GAG GAT CAG GTG CAC ATC ATA GAG CAT GAC CAA CTG TCC TTC TCC TCG ATC	912
K D E D Q V H I I E H D Q L S F S S I	304
ACA GAC CAG GCA GCT GGC ATG AAA GAG GAC CAG AAG CAA AAT GAG CCT TTT GTG GCC	969
T D Q A A G M K E D Q K Q N E P F V A	323
ACC CAG TCA TCT GCC TGC GTG GAT GGC CCT GCA AAC CAT TGA gcgtaggatttggtgcatt	1030
T Q S S A C V D G P A N H *	337
atgctagagcaccagggtcaggggtgaaggaagaggttaagtatgttcatttttatcagaatgcaaaagcgaaaa	1106
ttatgtcactttaagaaatagctactgtttgcaatgtcttattaaaaaacaacaaaaaagacacatggaacaaag	1182
aagctgtgacccagcaggatgtctaatatgtgaggaaatgagatgtccacctaataattcatatgtgacaaaatta	1258
tctcgaccttacataggaggagaataacttgaagcagtatgctgctgtggttagaagcagattttataacttttaact	1334
ggaaactttggggtttgcatitagatcatttagctgatggctaaatagcaaaatttatatttagaagcaaaaaaaa	1410
aaagcatagagatgtgttttataaatagggtttatgtgtactggtttgcatgtaccaccccaaatgattatttttg	1486
gagaatctaagtcaaactcactatttataatgcataaggaaccattaactatgtacatataaagtataaatatgtt	1562
tatattctgtacatatggttttaggtcaccagatcctagtgtagtcttgaaactaagactatagatattttggttct	1638
tttgatttctctttataactaaagaatccagagttgctacaataaaataaggggaataataaaaaaaaaaaaaa	1712

FIG. 1B-2

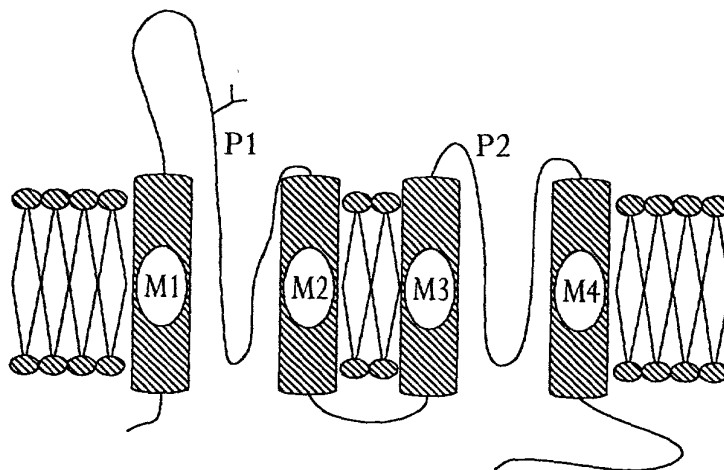
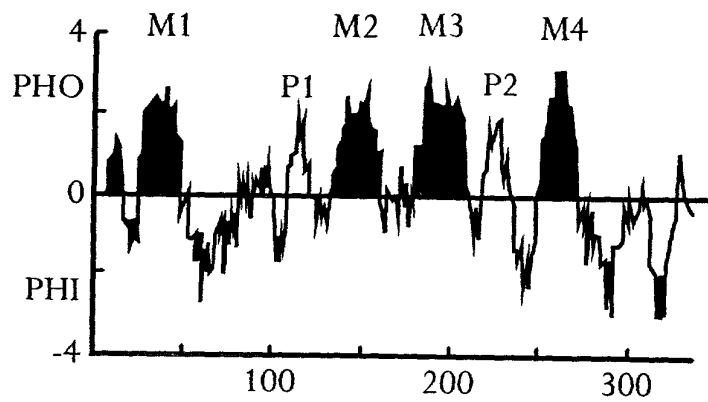


FIG. 1C

	1	14	27
TWIK-1 P1	F	T	S
TWIK-1 P2	E	L	E
TOK1 P2	Y	F	N
TOK1 P1	Y	G	N
Slo	Y	W	T
Shaker	I	P	D
Shab	I	P	E
Shal	I	P	A
Shaw	I	P	L
KAT1	Y	V	T
AKT1	Y	V	T
eag	Y	V	T
ROMK1	M	T	S
IRK1	E	T	A
GIRK1	F	P	S

FIG. 2A

204070 0845550

TWIK-1	1	MLOSLAGSSCVREVE-----RHRSAWCF--GE-----IVLGY
f17c8	1	MYTDEGEYSGDTHGGSTMQKMSPNTRONFRONVNVVCLSAATL--
M110-2	1	MTVSMEEENSKIOMLSATSKDKKVATDRSLLNKYHLGPLALHTGLVLS
TWIK-1	31	LEYLVFGAVVFSSVELPYEDLLRQE-----LRKLKRRFLEEHEC---L
f17c8	47	LVENLIGAGIF-----LAETONSSSES
M110-2	49	VTYALGGAYLFLSIEHP-EELKRREKAIREFQDLKQOQMGNITSGIEN
TWIK-1	71	SEOOLEOFLGRVL-----EASNYGVSVLSNASGNWNW--DETSALE
f17c8	69	LNENSEV--SKCLHNLPIGGKITAEMKSKLGKCEITKSSRIDGFGKATF
M110-2	96	SEOSTEELTKKLELMLEDAHNAHAETTYFFLNRETPKDMW--TFSSALV
P1		
TWIK-1	110	EASTVLESTTGCGHTVPLESDGGKAFCL-YSVIGIPFTLLFETAVVORI
f17c8	115	FSWTEYSTVGYGSLPHSTLGRYTIF-YSLLMDPVFIAPKFEFGCTFL
M110-2	142	FTTTTVPVGYGYLEPVSAYGR-MCLLAYALLGIPETLVTMADTCREA
TWIK-1	157	TVH---VTRRPVL-----YEHWRWGESKOVVALVHAVLLGEVTVSCFF
f17c8	162	AHFLVVSNRTRLA VKKAYKLS-ONPENAETPSNSLOHDYLLFLSSI
M110-2	189	AQL---VTR-----W-FGDNMAIPAAITV-----CLL
P2		
TWIK-1	197	FL-PAAVFS---VL--EDDWNELSFYPCFISESTIGEGDYVRGEGYN
f17c8	209	LLCSLSELSSSAFSSSIENISYLSSVYFGETMFLDIGEDVPTN---
M110-2	213	FAYPLVVGFG---LLCSTSNITYLDSVYFSLTSFTTIGFGDLTP----
TWIK-1	239	QKFRLEYKIGETCYLELGLIAMEVVDTEFC-----EEHELKKEK----
f17c8	254	-----LVWFSGYCMFLFLISDYLSNOIFYFCQARVRYFFHILARKIL
M110-2	253	-----DMNVITHVLELAVGVILVTLLDIVA---AEMIDRVHYMGRHYG
TWIK-1	278	-----KMFYVKKDKDEDVHTEHDOL-----SFSSFTDOAGMKED
f17c8	295	LLRE-EDDGFOLETFSLOHEPLINSQCMPSL-----VLDCKEELDND
M110-2	294	KAKELAGKMFOLAQSLNKKOGLVSGVGOLHALAREGMVNGREEVDKIQ
TWIK-1	315	QKONEPFAVAT-----QSSACVDGPANH-----
f17c8	338	EKLISLLET-----
M110-2	342	EDGIIAFSPDVMGDFMDTLISIYSRRSRRSAENSARNLFLS

FIG. 2B

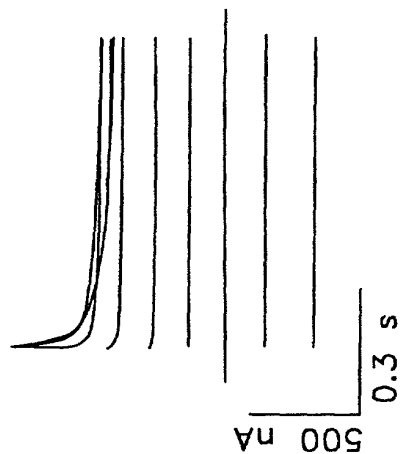


FIG. 3A

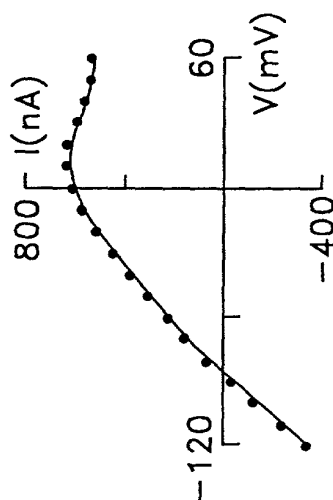


FIG. 3B

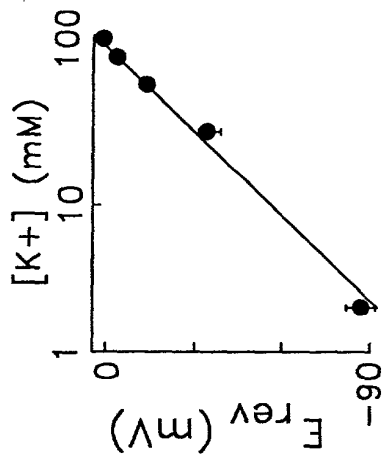
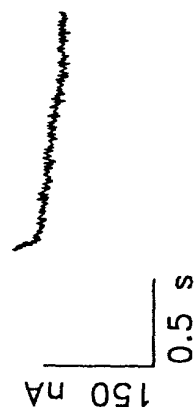
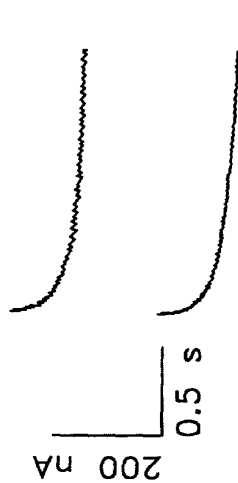


FIG. 3C



Ba²⁺ 1mM



quinine 100μM

FIG. 3D

FIG. 3E

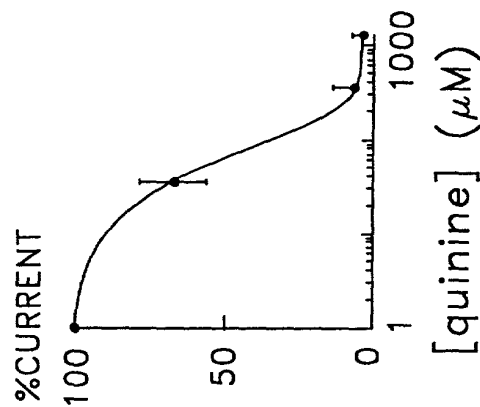


FIG. 3F

FIG. 4A

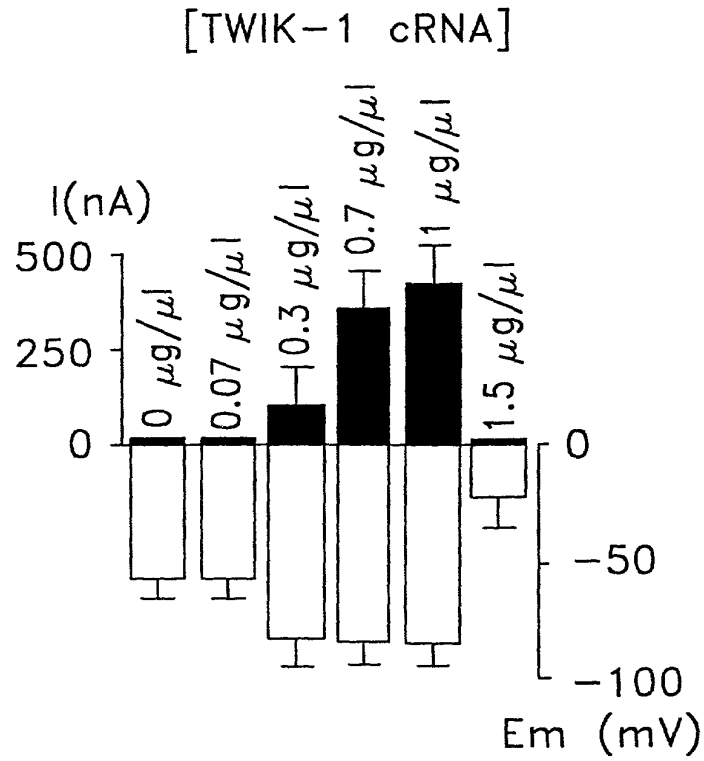


FIG. 4B

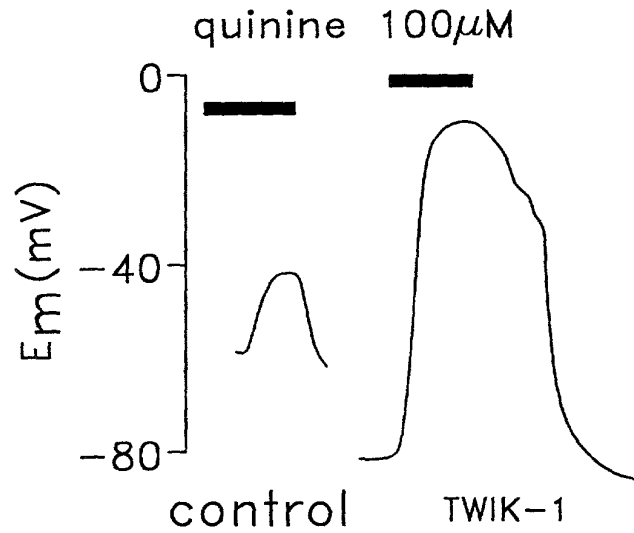
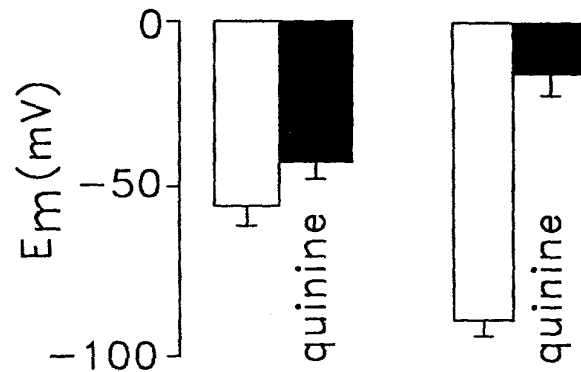


FIG. 4C



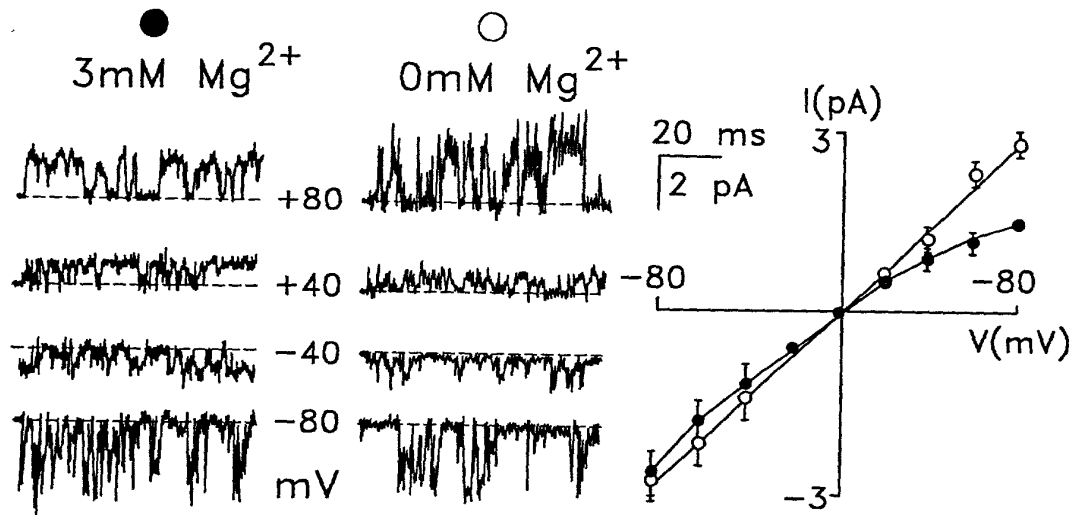


FIG. 5A

FIG. 5B

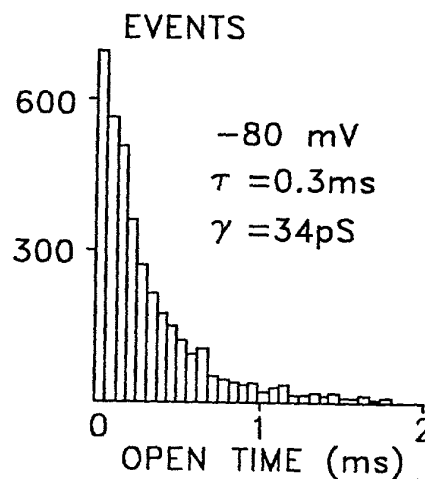
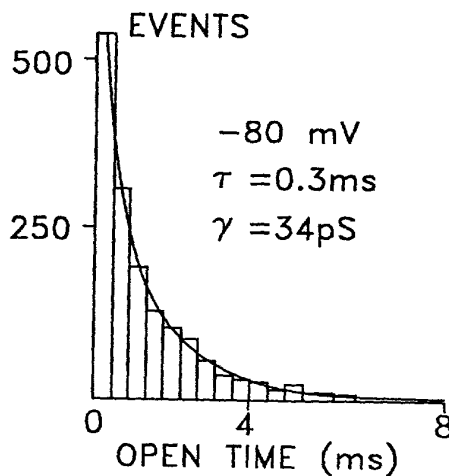
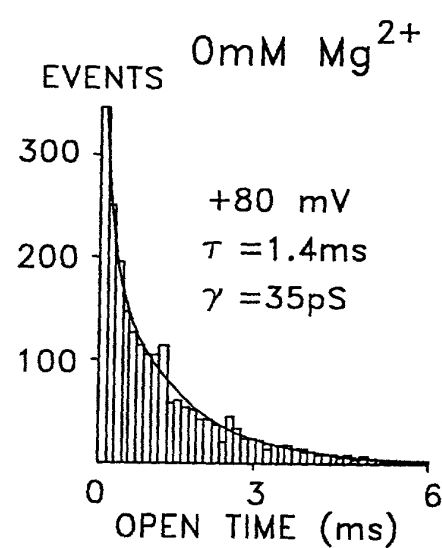
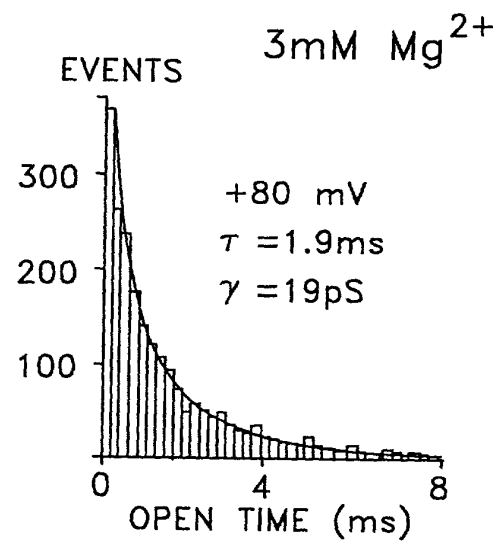


FIG. 5C

FIG. 5D

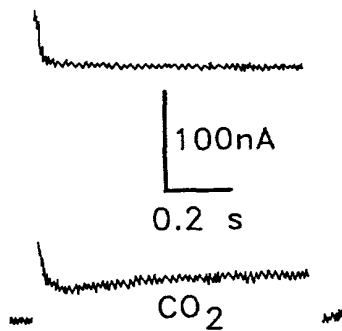


FIG. 6A

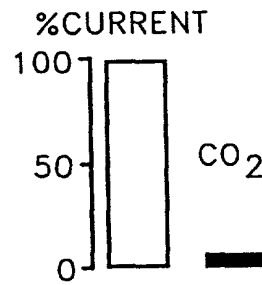


FIG. 6B

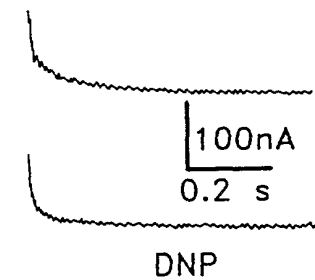


FIG. 6C

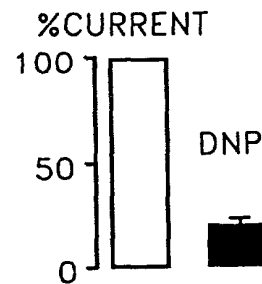


FIG. 6D

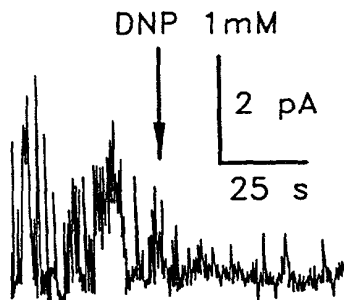


FIG. 6E

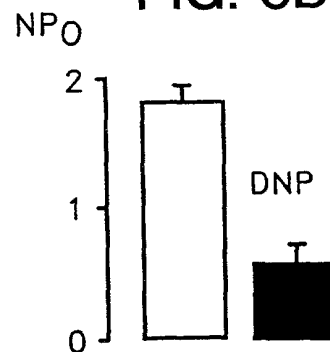


FIG. 6F

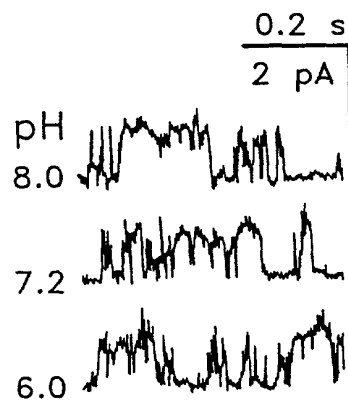


FIG. 6G

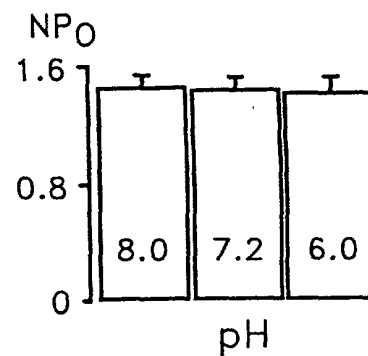


FIG. 6H

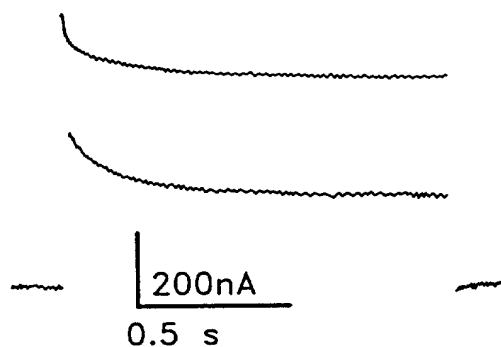


FIG. 7A

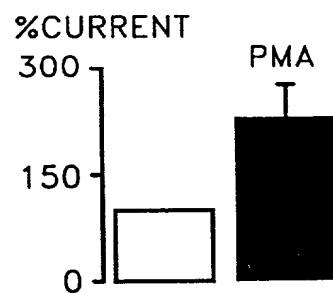


FIG. 7B

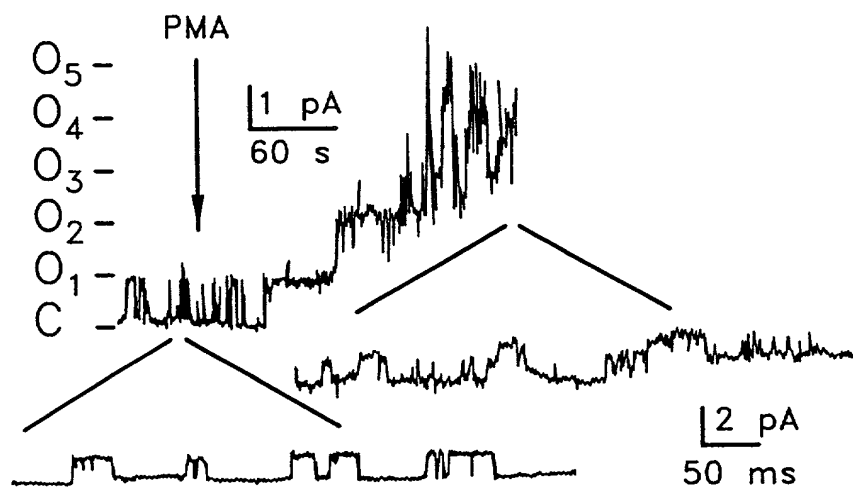


FIG. 7C

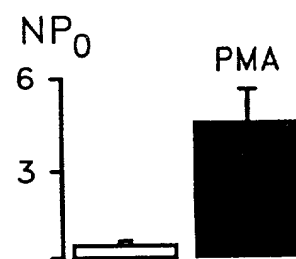


FIG. 7D

tgccctgcgcggtatagcgggcgagcgagccatgccccagggcgctccg -77
 gggcagcagcagcgggcgccggggccgatgcgcgggcgggggcgccggggggcgggcgggccggggcggggacg -1

ATG AAG CGG CAG AAC GTG CGC ACG CTG GCG CTC ATC GTG TGC ACC TTC ACC TAC CTG 57
 M K R Q N V R T L A L I V C T F T Y L 19
 E N V R T L A L I V C T F T Y L

CTG GTG GGC GCC GCG GTC TTC GAC GCG CTG GAG TCG GAG CCC GAG CTG ATC GAG CGG 114
 L V G A A V F D A L E S E P E L I E R 38
 L V G A A V F D A L E S E P E M I E R

CAG CGG CTG GAG CTG CGG CAG CAG GAG CTG CGG GCG CGC TAC AAC CTC AGC CAG GGC 171
 Q R L E L R Q Q E L R A R Y N L S Q G 57
 Q R L E L R Q L E L R A R Y N L S E G
 *

GGC TAC GAG GAG CTG GAG CGC GTC GTG CTG CGC CTC AAG CCG CAC AAG GCC GGC GTG 228
 G Y E E L E R V V L R L K P H K A G V 76
 G Y E E L E R V V L R L K P H K A G V

CAG TGG CGC TTC GCC GGC TCC TTC TAC TTC GCC ATC ACC GTC ATC ACC ACC ATC GGC 285
 Q W R F A G S F Y F A I T V I T T I G 95
 Q W R F A G S F Y F A I T V I T T I G

TAC GGG CAC GCG GCA CCC AGC ACG GAT GGC GGC AAG GTG TTC TGC ATG TTC TAC GCG 342
 Y G H A A P S T D G G K V F C M F Y A 114
 Y G H A A P S T D G G K V F C M F Y A

CTG CTG GGC ATC CCG CTC ACG CTC GTC ATG TTC CAG AGC CTG GGC GAG CGC ATC AAC 399
 L L G I P L T L V M F Q S L G E R I N 133
 L L G I P L T L I M F Q S L G E R I N

ACC TTG GTG AGG TAC CTG CTG CAC CGC GCC AAG AAG GGG CTG GGC ATG CGG CGC GCC 456
 T L V R Y L L H R A K K G L G M R R A 152
 T E V R Y L L H R A K R G L G M R H A

GAC GTG TCC ATG GCC AAC ATG GTG CTC ATC GGC TTC TTC TCG TGC ATC AGC ACG CTG 513
 D V S M A N M V L I G F F S C I S T L 171
 E V S M A N M V L I G F V S C I S T L

TGC ATC GGC GCC GCC GGC TTC TCC CAC TAC GAG CAC TGG ACC TTC TTC CAG GCC TAC 570
 C I G A A A F S H Y E H W T F F Q A Y 190
 C I G A A A F S Y Y E R W T F F Q A Y

TAC TAC TGC TTC ATC ACC CTC ACC ACC ATC GGC TTC GGC GAC TAC GTG GCG CTG CAG 627
 Y Y C F I T L T T I G F G D Y V A L Q 209
 Y Y C F I T L T T I G F G D Y V A L Q

AAG GAC CAG GCC CTG CAG ACG CAG CCG CAG TAC GTG GCC TTC AGC TTC GTC TAC ATC 684
 K D Q A L Q T Q P Q Y V A F S F V Y I 228
 K D Q A L Q T Q P Q Y V A F S F V Y I

CTT ACG GGC CTC ACG GTC ATC GGC GCC TTC CTC AAC CTC GTG GTG CTG CGC TTC ATG 741
 L T G L T V I G A F L N L V V L R F M 247
 L T G L T V I G A F L N L V V L R F M

FIG. 8A

ACC	ATG	AAC	GCC	GAG	GAC	GAG	AAG	CGC	GAC	GCC	GAG	CAC	CGC	GCG	CTG	CTC	ACG	CGC	798
T	M	N	A	E	D	E	K	R	D	A	E	H	R	A	L	L	T	R	266
T	M	N	A	E	D	E	K	R	D	A	E	H	R	A	L	L	T	H	
AAC	GGG	CAG	GCG	GGC	GGC	GGC	GGA	GGG	GGT	GGC	AGC	GCG	CAC	ACT	ACG	GAC	ACC	GCC	855
N	G	Q	A	G	G	G	G	G	G	G	S	A	H	T	T	D	T	A	285
N	G	Q	A	V	G	L	G	G	L	S	C	L	S	G	S	L	G	D	
TCA	TCC	ACG	GCG	GCA	GCG	GGC	GGC	GGC	GGC	TTC	CGC	AAC	GTC	TAC	GCG	GAG	GTG	CTG	912
S	S	T	A	A	A	G	G	G	G	F	R	N	V	Y	A	E	V	L	304
VRPRDPV	TC	AA	A	A	G	GVGVGVGGS	G	F	R	N	V	Y	A	E	V	L			
CAC	TTC	CAG	TCC	ATG	TGC	TCG	TGC	CTG	TGG	TAC	AAG	AGC	CGC	GAG	AAG	CTG	CAG	TAC	969
H	F	Q	S	M	C	S	C	L	W	Y	K	S	R	E	K	L	Q	Y	323
H	F	Q	S	M	C	S	C	L	W	Y	K	S	R	E	K	L	Q	Y	
TCC	ATC	CCC	ATG	ATC	ATC	CCG	CGG	GAC	CTC	TCC	ACG	TCC	GAC	ACG	TGC	GTG	GAG	CAG	1026
S	I	P	M	I	I	P	R	D	L	S	T	S	D	T	C	V	E	Q	342
S	I	P	M	I	I	P	R	D	L	S	T	S	D	T	C	V	E	H	
AGC	CAC	TCG	TCG	CCG	GGA	GGG	GGC	GGC	CGC	TAC	AGC	GAC	ACG	CCC	TCG	CGA	CGC	TGC	1083
S	H	S	S	P	G	G	G	G	R	Y	S	D	T	P	S	R	R	C	361
S	H	S	S	P	G	G	G	G	R	Y	S	D	T	P	S	H	R	C	
CTG	TGC	AGC	GGG	GCG	CCA	CGC	TCC	GCC	ATC	AGC	TCG	GTG	TCC	ACG	GGT	CTG	CAC	AGC	1140
L	C	S	G	A	P	R	S	A	I	S	S	V	S	T	G	L	H	S	380
L	C	S	G	T	Q	R	S	A	I	S	S	V	S	T	G	L	H	S	
CTG	TCC	ACC	TTC	CGC	GGC	CTC	ATG	AAG	CGC	AGG	AGC	TCC	GTG	TGA	ctgccccgagggacc				1200
L	S	T	F	R	G	L	M	K	R	R	S	S	V	*					395
L	A	A	F	R	G	L	M	K	R	R	S	S	V						
tggagcacctggggg	cgcgggg	cgggg	gagcc	ccctg	ctggg	gagcc	aggag	actg	cccc	ctg	ctg	ccctt	ctg	ccctt	ctg	ccctt	ctg	ccctt	1276
ggaccccg	cacaac	atccct	caccact	ctcccc	cagc	cccc	ccatct	ccgact	gtg	cctg	cttgc	caccag	ccggca						1352
ggaggcc	gggct	ctgagg	acccct	gggg	cccc	atcg	gagcc	ctgcaa	attcc	gagaa	atgt	gaaact	tgg	gggg					1428
tcaggg	gagaa	aggc	agaag	ctggg	agc	ctcc	cttcc	cttgg	aaa	atcta	agaag	ctccc	agtc	cctc	agag	accc			1504
gctgg	taccac	cccc	acctt	cg	gaggg	gactt	catgt	ccgt	gtac	gttt	gcat	ctct	at	ttata	ccct	ctgt	cc		1580
gctagg	tctccc	acctt	ccctt	gg	ttcc	aaa	agcc	agggt	gtct	atgt	ccaa	gtc	accc	ctact	cag	cccc	actcc		1656
cctt	ctcat	cccc	agct	gtgt	ctcc	aa	ccct	ccctt	cg	gtt	gttt	gcat	ggct	ttg	cag	ttat	gg	agaa	1732
gaa	accc	cag	cagtc	ctaa	agct	gggt	cccc	agaa	agc	agga	agga	agga	ggg	acagg	cagg	cagc	agg	ggg	1808
g	cgag	ctggg	aggc	agg	gagc	ggc	ctgt	cag	tctg	caga	aatgg	tcg	act	ggag	gttca	agct	aact	ggc	1884
cag	ccac	attt	ctcat	agc	aggt	agg	actt	cag	cctt	ccag	acact	gc	cctt	taga	atct	gga	acaga	agact	1960
ctc	cacc	ata	attg	ctg	ata	attacc	ccact	cttaa	attt	gtc	gagt	gatt	ttt	tag	cctct	gaaa	actct	atg	2036
cact	gatt	ctt	gtg	ctc	acaaa	acc	ctact	tag	gtcat	caggg	cagg	agt	tct	cact	ccc	attt	tac	agat	2112
ga	ata	ctg	agg	cctg	gac	aggt	ga	agt	gacc	agag	agca	aaagg	caa	aggg	gtgg	ggg	ctg	gag	2188
ac	ctg	tatt	cccc	aac	actt	ttg	gag	gctg	aggt	ttg	gagg	attg	ctt	gag	ccc	agga	attc	gag	2264
ac	atag	t	gag	accc	ctct	ctac	aaaa	ata	aaaa	att	aacc	aggt	gtg	gtg	gc	ag	tcg	cct	2340
ctt	ggg	agg	ctg	agg	gtt	gtt	gtg	ag	cctg	ggg	aggt	c	gag	gct	gtg	ag	cctg	att	2416
ctc	cag	cctg	gggt	gac	agg	gca	ag	ac	ccct	gtct	ca	aaaa	aaaaaaaa						2465

FIG. 8B

FIG. 9A



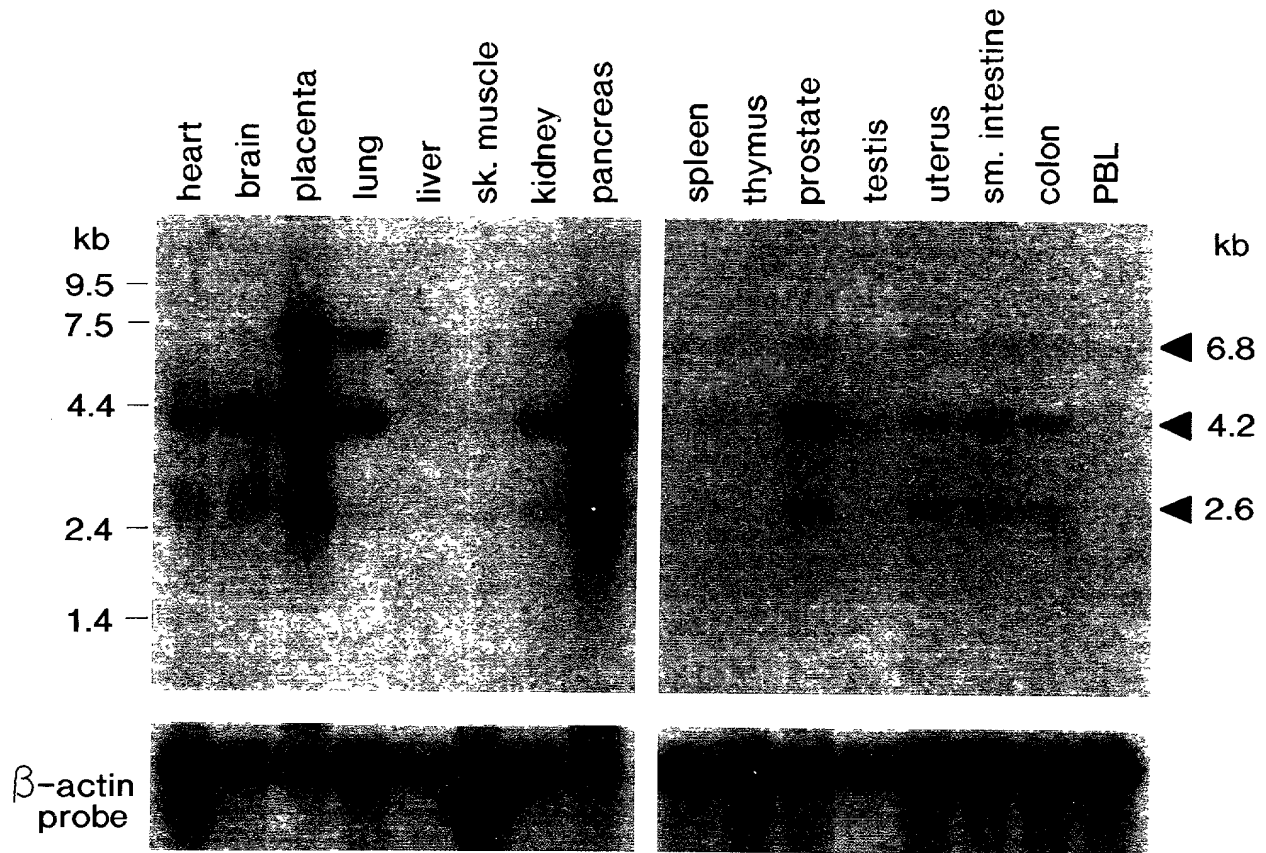


FIG. 10

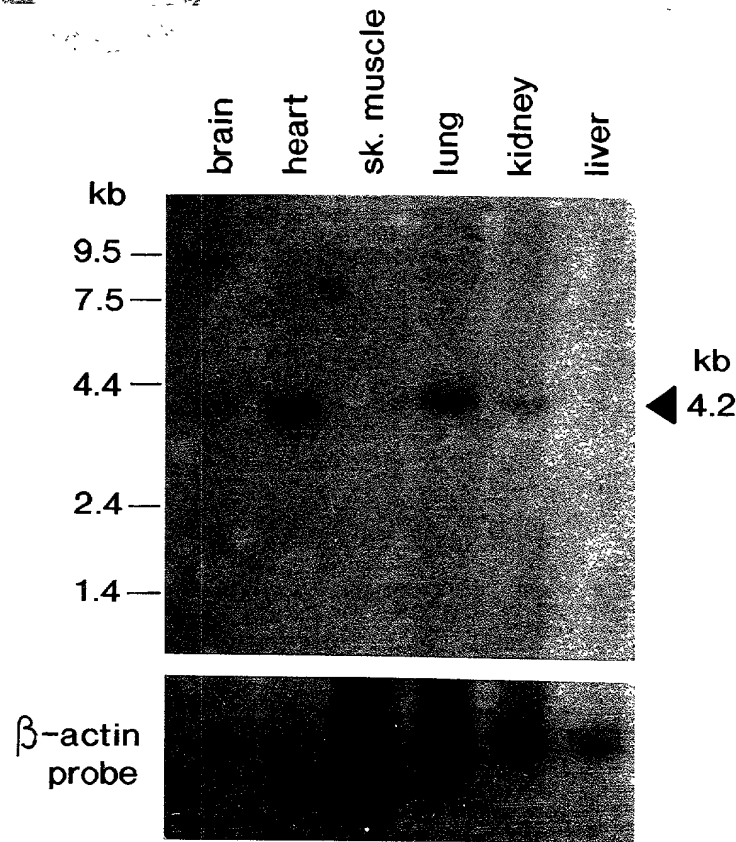


FIG. 11A

FIG. 11B

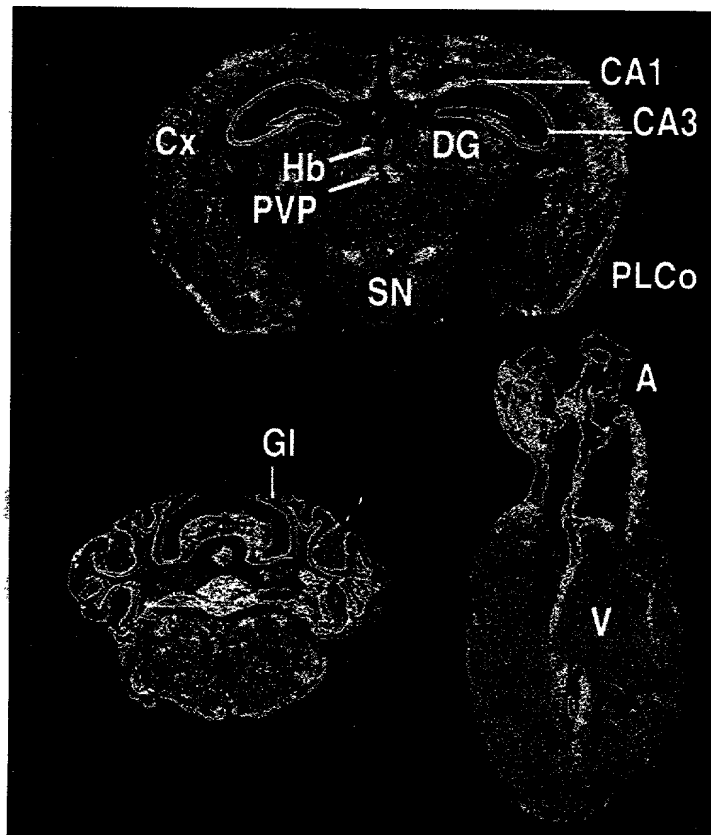


FIG. 11C

FIG. 11D

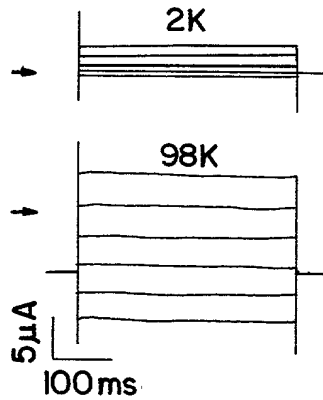


FIG. 12A

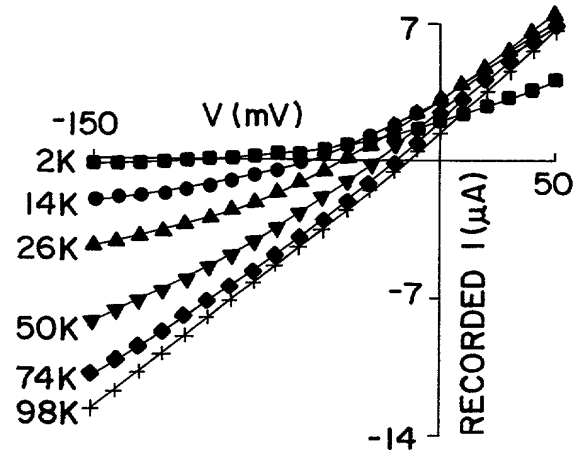


FIG. 12B

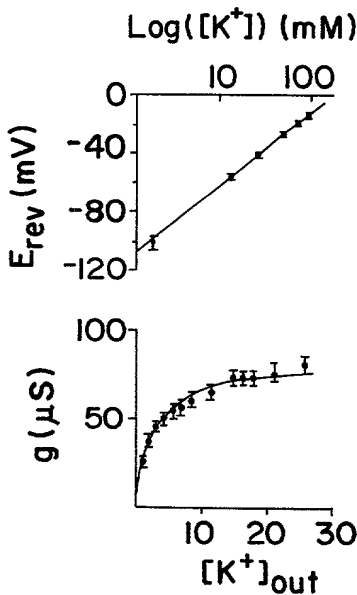


FIG. 12C

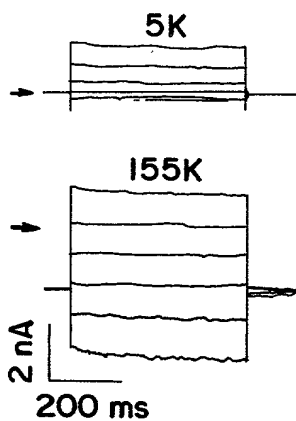


FIG. 12E

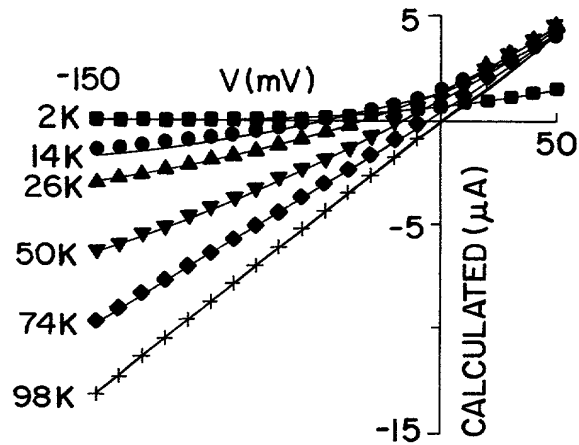


FIG. 12D

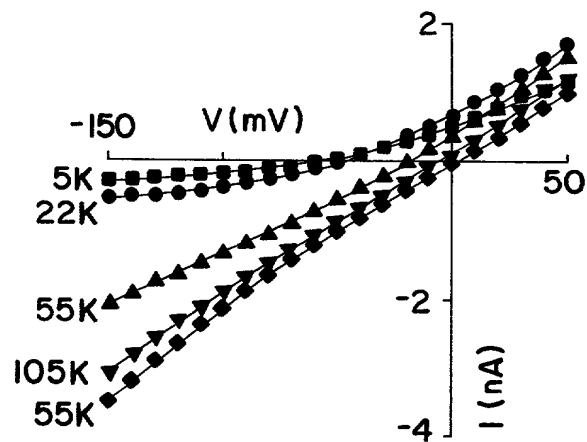


FIG. 12F

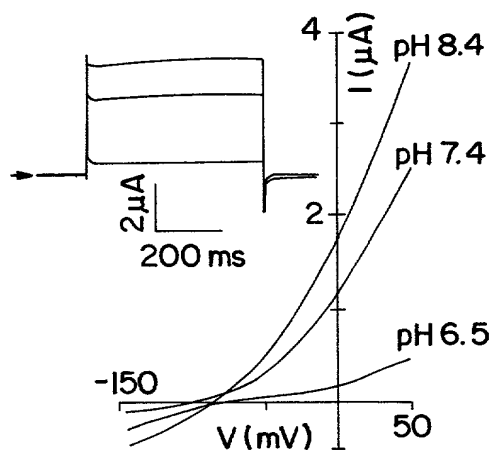


FIG. 13A

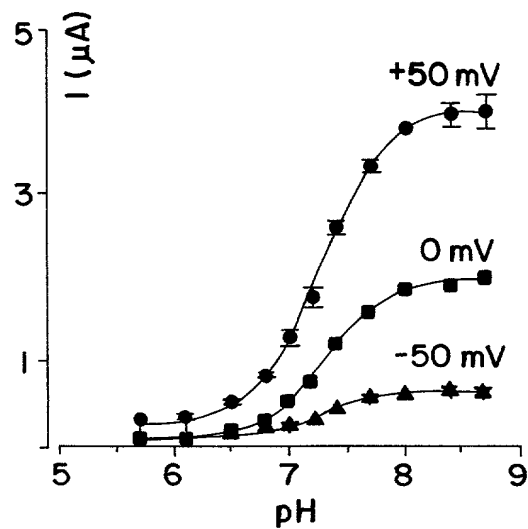


FIG. 13B

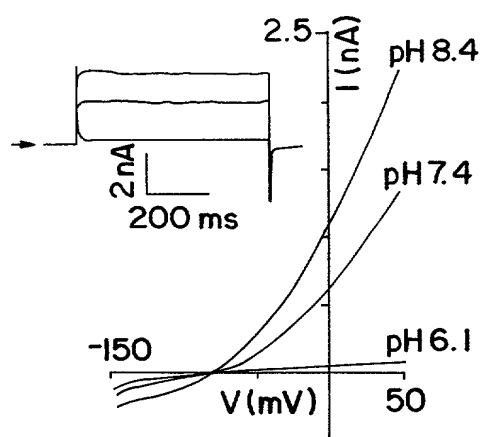


FIG. 13C

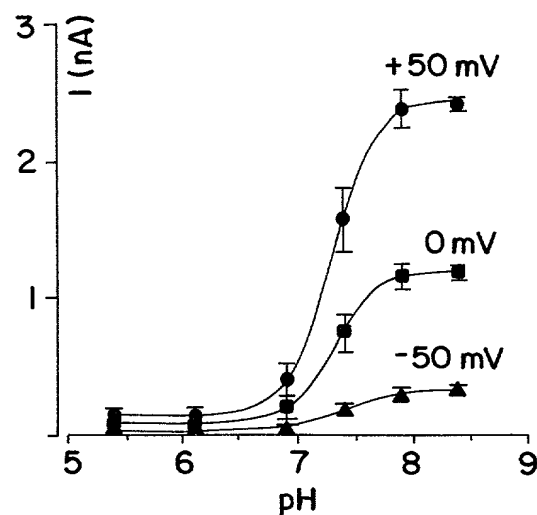


FIG. 13D